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SHORT COMMUNICATION

A NOTE ON THE SEED-COAT STRUCTURE OF *ERYTHRINA CAFFRA* THUNB.

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The seeds of *Erythrina caffra* are bright coral red and more or less kidney-shaped. On the convex surface is a linear, black scar, the hilum. Germination studies revealed that the seed-coat is impermeable to both water and oxygen (Small, McNaughton and Greef, unpublished data). As it was suggested that the palisade layers of the testa are responsible for impermeability properties of leguminous seeds (Esau, 1960; Villiers, 1972), the seed-coat structure of *E. caffra* was investigated.

The following layers, all derivatives of the outer integument of the ovule, could be distinguished in the seed-coat of *E. caffra.*

(a) On the outside is the palisade layer which consists of a single layer of radially elongated macrosclereids (Fig. 1).

(b) Then follows a region of more or less columnar cells, which are slightly constricted about the middle. One layer of these, the hour-glass cells, fits tightly against the palisade cells, but towards the equator of the seed they are more loosely arranged.

(c) The two innermost layers consist of obliterated parenchyma (Fig. 1).

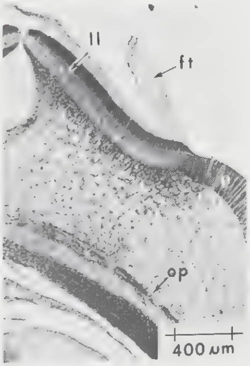

FIG. 1
Transverse section through seed-coat of *E. caffra* (ft—funicular tissue; ll—light line; op—obliterated parenchyma; p—palisade).

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At the hilar region the structure is more complicated. Above the palisade, on either side of the hilar fissure, is a parenchymatous layer and a layer of radially elongated cells. Both these are of funicular origin (Fig. 1).

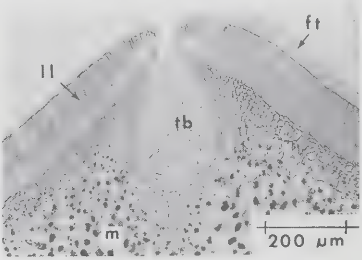

FIG. 2
Transverse section through hilar region (ft—funicular tissue; ll—light line; m—mesophyll; tb—tracheid bar).

Subtending the hilar fissure is a compact group of tracheids with large pits. This is known as the tracheid bar (Fig. 2). Surrounding this are four to five layers of cells, the walls of which are pitted and thickened, although not lignified. Then follows a broad band of aerenchymatous tissue, often called mesophyll. The cells are extensively branched and some are filled with a reddish-brown deposit (Fig. 2). Separating the mesophyll from the cotyledons are two layers of obliterated parenchyma (Fig. 1).

The occurrence of two palisade layers in the hilar region has been reported for several legumes (Hyde, 1954; Chowdhury and Buth, 1970), including *Erythrina variegata* (Maranon and Santos, 1932). However, in *E. caffra*, although the hilar palisade appears to resemble two layers of cells, it is in fact uniseriate.

In this single-layered palisade of the hilar region each cell is differentiated into an inner and an outer part with a difference in diameter of the cell lumen. This optical effect has been labelled light-line (Coe and Martin, 1920; Hamly, 1932,

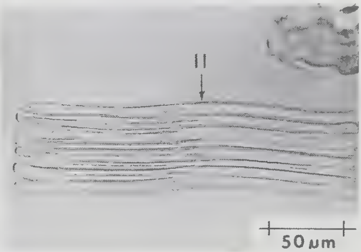

FIG. 3
Maceration of palisade layer showing macrosclereids with light line (ll—light line).

1934; Cavazza, 1950) or *linea lucida* (Corner, 1951) and occurs only in the hilar region (Fig. 2 and 3). That only one palisade occurs is substantiated by the following points. There are no nuclei in the outer part. In those species where a true counter-palisade is found, a cuticle separates the two palisade layers, but in *E. caffra* the cuticle of the would-be counter-palisade is continuous with that of the palisade (Fig. 1). Macerations reveal the presence of macrosclereids in which the difference in cell lumen simulates a dividing wall (Fig. 3). However, under high power there is no evidence of transverse walls. The outer and inner parts are continuous (Fig. 4).

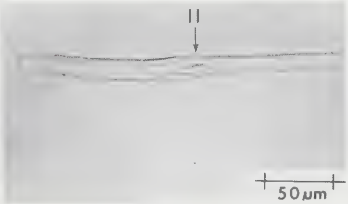

FIG. 4
A single macrosclereid from palisade maceration (11—light line).

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